

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT



To:

OKABE, Masao

**No.602, Fuji Bldg., 2-3,
Marunouchi 3-chome,
Chiyoda-ku, Tokyo, 1000005
Japan**

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

25. 5. 2004

Applicant's or agent's file reference

CFO17898WO

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/001429

International filing date (day/month/year)

10.02.2004

Priority date (day/month/year)

14.02.2003

International Patent Classification (IPC) or both national classification and IPC

Int.Cl.⁷ **H01L27/14, H01L27/146, H04N5/32**

Applicant

CANON KABUSHIKI KAISHA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Japan Patent Office

3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan

Authorized officer

MASAAKI AWANO

Telephone No. +81-3-3581-1101 Ext. 3462

4M 9353

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/001429

Box No. I

Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/ 001429

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|--------------------------------|-----|
| Novelty (N) | Claims | <u>3, 5, 9, 12-18</u> | YES |
| | Claims | <u>1, 2, 4, 6-8, 10, 11</u> | NO |
| Inventive step (IS) | Claims | <u>5, 9, 12-14, 18</u> | YES |
| | Claims | <u>1-4, 6-8, 10, 11, 15-17</u> | NO |
| Industrial applicability (IA) | Claims | <u>1-18</u> | YES |
| | Claims | | NO |

2. Citations and explanations

[Cited documents]

- 1.JP 11-97660 A(SEMICONDUCTOR ENERGY LABORATORY CO.,LTD.)1999.04.09,whole document(Family none)
- 2.JP 11-121731 A(SEMICONDUCTOR ENERGY LABORATORY CO.,LTD.)1999.04.30,whole document(Family none)
- 3.JP 2000-156522 A(CANON KABUSHIKI KAISHA)2000.06.06, whole document(Family none)
- 4.US 6323490 B1(KABUSHIKI KAISHA TOSHIBA)2001.11.27, whole document&JP 11-274524 A
- 5.US 5136358 A(FUJI XEROX CO.,LTD.)1992.08.04,whole document &JP 4-42934 A
- 6.JP 2-82555 A(HITACHI LTD.)1990.03.23, whole document(Family none)
- 7.JP 62-86857 A(FUJI PHOTO FILM CO.,LTD.)1987.04.21, whole document(Family none)
- 8.JP 2000-241557 A(KABUSHIKI KAISHA TOSHIBA)2000.09.08, whole document(Family none)

[Claims 1,2,4,6-8,10,11]

The subject matters of claims 1,2,4,6-8,10,11 do not meet the requirement of novelty. Document 1 discloses a solid-state image pickup device comprising PIN type photodiodes as photoelectric conversion elements,thin film transistors as switching elements,and a shielding layer formed above the thin film transistors which is held at a constant electric potential and made of Cr, Mo, W etc.

Also, document 2 discloses a solid-state image pickup device comprising PIN type photodiodes as photoelectric conversion elements,thin film transistors as switching elements,and shielding Cr layer formed above the thin film transistors which is grounded.

[Claim 3]

The subject matter of claim 3 does not appear to involve an inventive step in view of the document 1 or 2 cited in the ISR and the document 3 cited in the same.Document 3 discloses MIS type photo-diodes used for photoelectric conversion elements.Technical features of PIN type photodiodes and MIS type photodiodes, disclosed in document 1 or 2 and document 3, respectively, have the same function and are related to similar technical fields.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: **Box No. V**

Therefore, the skilled person in the art would easily conceive the idea of employing the feature of MIS type photodiodes in document 3 to substitute the feature of PIN type photodiodes disclosed in document 1 or 2.

[Claims 5,9,12-14]

The subject matters of claims 5,9 and 12-14 are neither disclosed in any of the documents cited in the ISR nor obvious to a person skilled in the art.

[Claims 15,16]

The subject matters of claims 15 and 16 do not appear to involve an inventive step in view of the document 1 or 2 cited in the ISR, the document 3 and document 4 cited in the same.

Document 3 discloses a radiation image pickup device comprising photoelectric conversion elements formed above switching elements.

Documents 1 or 2 discloses the device includes a shielding layer between photoelectric conversion elements and switching elements.

Although document 3 does not disclose the technical feature of a shielding layer between photoelectric conversion elements and switching elements, both the present invention and that of document 1 or 2 share the same problem and employ the same technical feature. Therefore, employing the feature of the shielding layer disclosed in document 1 or 2 in order to constitute the present invention would have been easily conceived by the person skilled in the art.

Also, document 4 discloses the radiation image pickup device includes a wavelength conversion unit above photoelectric conversion elements and the skilled person in the art would easily conceive the idea of employing the unit to dispose above the photoelectric conversion elements.

[Claim 17]

The subject matters of claim 17 does not appear to involve an inventive step in view of the document 1 or 2 cited in the ISR, the document 3 and document 8 cited in the same.

Document 8 discloses a radiation image pickup device includes a radiation conversion layer for directly converting radiation into electric charges and the skilled person in the art would easily conceive the idea of employing the layer to substitute the photoelectric conversion elements in document 3.

[Claim 18]

The subject matter of claim 18 is neither disclosed in any of the documents cited in the ISR nor obvious to a person skilled in the art.